

Amendments to the Claims

All amendments are made without prejudice or disclaimer.

1. (Currently Amended) A method for the preparation of a titanium oxide coating on an implant comprising the steps of:

- a) ~~adding-forming~~ a preparation ~~containing-comprising~~ an organic solvent and an organometallic titanium oxide precursor ~~and optionally water and/or an acid with and~~ metal ions ~~as~~ metal salts and/or ~~with~~ organometallic compounds, ~~wherein the metal ions are dispersed -to~~ disperse metal ions homogeneously in the preparation ~~wherein the metal ions and~~ exert an anti-microbial or antibacterial effect, ~~respectively,~~ under physiological conditions;
- b) applying the preparation prepared in a) onto an implant ~~to form a coating~~;
- c) drying the coating ~~thus applied~~.

2. (Withdrawn) The method according to claim 1 characterized in that after said step c) heating is conducted to 100 to 1000°C.

3. (Withdrawn, Currently Amended) The method according to ~~step 1 or 2 claim 1,~~ characterized in that the implant is a metal, metal alloy, a glass, a ceramic, a plastic, a composite material, or a bone implant.

4. (Withdrawn, Currently Amended) The method according to one or more of the preceding claims characterized in that said implant is a catheter, an osteosynthesis plate, an endoprosthesis, an external fixateur, an internal fixateur, a nail, a screw, ~~and/or~~ a wire, a heart valve, an artificial blood vessel, ~~or~~ a shunt, an implant for facial/plastic surgery, a middle ear implant, or a dental implant.

5. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding~~ ~~claims claim 3~~ characterized in that ~~said the implant is a metal in the case of a metallic implant is~~ ~~or metal alloy selected from~~ titanium, steel, iron, ~~and/or~~ ~~an a steel alloy containing steel, an iron~~

alloy, a titanium alloy and/or, and a CoCr alloy.

6. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding claims~~ claim 5 characterized in that the ~~metal alloy implant~~ is a titanium alloy, preferably TiAl6V4 or TiAl6Nb7, a CoCr alloy or an osteosynthesis steel, preferably AISI316L.

7. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding claims~~ claim 3 characterized in that ~~said the implant is a plastic~~ is selected from polyethylene, polypropylene, polytetrafluoroethylene, polyethylene terephthalate, a polyamides, a polyurethanes, a polysiloxanes, a polysiloxane elastomers, a polyetherether ketone, and/or a polysulfone, and a mixture thereof.

8. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding claims~~ claim 1 characterized in that ~~as the organic solvent~~ is selected from a linear or branched alcohols with a chain lengths of 2 to 8 carbon atoms ~~or, a cyclic hydrocarbon, an aromatic hydrocarbon, or a heteroaromatic hydrocarbons or derivatives thereof are used.~~

9. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding claims~~ claim 1 characterized in that the organometallic titanium oxide precursor is fourfold coordinated titanium having linear or branched alkyl and/or alkenyl radicals bound by oxygen bridges wherein the alkyl and/or alkenyl radicals ~~preferably have a chain length of 2 to 5 carbon atoms and can have O and/or N atoms substituted or within the chain.~~

10. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding claims~~ claim 1 characterized in that ~~as the~~ preparation comprises an acid selected from nitric acid, hydrochloric acid, sulphuric acid, phosphoric acid, an organic acid ~~or and a mixtures thereof are used.~~

11. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding~~

~~claims claim 1~~ characterized in that the ~~metal salts and/or organometallic compounds have~~
~~mono- to tetravalent metal ions, preferably metal ions are selected from~~ zinc, mercury, vanadium,
aluminium, titanium, chromium, cadmium, tin, lead, nickel ~~and/or~~, cobalt ions, more preferably
calcium, magnesium, copper, zinc ~~and/or~~ ~~and~~ silver ions, ~~and a mixture thereof.~~

12. (Withdrawn, Currently Amended) The method according to one or more of the preceding
claims characterized in that the metal ion concentration in step a) is selected to give a metal ion
concentration of 1-20% by weight; ~~preferably 5-15% by weight; still more preferred of 10-12%~~
~~by weight in the applied, dried and optionally heated coating.~~

13. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding~~
~~claims claim 1~~ characterized in that ~~said application step b)~~ is carried out by dip coating, spin
coating, blade coating, printing or spraying.

14. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding~~
~~claims claim 1~~ characterized in that the preparation of step a) is applied in a coating thickness
that the coating thickness of a single coating after drying and optionally heating is 50-1000 nm;
~~preferably 50-200 nm, more preferably 130-170 nm, most preferably about 150 nm.~~

15. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding~~
~~claims claim 1~~ characterized in that the preparation of step a) is applied in the form of a sol in
which the metal ions are homogeneously dispersed and dissolved, wherein said sol ~~in which the~~
~~metal salts and/or organometallic compounds are homogeneously dispersed and dissolved~~
transforms into a gel during or after the application ~~wherein the metal ions are homogeneously~~
~~dispersed and dissolved step b).~~

16. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding~~
~~claims claim 1~~ characterized in that the steps a)-c) of claim 1 are repeated ~~once or several one or~~
more times to generate one or more additional titanium oxide coatings on the implant wherein

each of the coatings can optionally be heated after step c) to 100 to 1000° C.

17. (Withdrawn) The method according to claim 16 characterized in that the metal ion concentration is varied in step a) to achieve different concentrations of metal ions in the original coating and the one or more additionally applied, dried and optionally heated coatings.

18. (Withdrawn, Currently Amended) The method according to claim ~~16 or 17~~ characterized in that the metal ion concentration is varied in step a) to achieve concentrations of metal ions ~~in the original coating and in the one or more additionally applied, dried and optionally heated coatings~~ that decrease from the internal coatings close to the implant to the external coatings.

19. (Withdrawn, Currently Amended) The method according to ~~one or more of the preceding claims~~ claim 1 characterized in that drying of the coating applied in step c) is performed under supercritical conditions.

20. (Withdrawn, Currently Amended) The method according to ~~one or more of the claims 16-19~~ claim 16 characterized in that the individually applied coatings contain different metal ions.

21. (Withdrawn, Currently Amended) The method according to ~~one or more of claims 16-20~~ claim 16 characterized in that the ~~antibacterial or anti-microbial metal ions, respectively,~~ are copper ions and/or silver ions.

22. (Currently Amended) An implant having a titanium oxide coating ~~which can be prepared according to one or more of the preceding claims~~ claim 1.

23. (Currently Amended) The implant according to ~~claims~~ claim 22 characterized in that the metal ions contained in the coating can be dissolved out of the coating into the surrounding medium under physiological conditions.

24. (Withdrawn, Currently Amended) The implant according to claim 22-~~or 23~~ characterized in that the layer thickness of ~~each~~ a single titanium oxide coating is 50-1000 nm, ~~preferably 50-200 nm, more preferred 130-170 nm, most preferably about 150 nm.~~

25. (Currently Amended) The implant according to ~~one or more of the claims 22-24~~ claim 22 characterized in that the implant comprises a plurality of titanium oxide coating layers comprising metal ions ~~are homogeneously dispersed in each titanium oxide coating.~~

26. (Currently Amended) The implant according to ~~one or more of the claims 22-25~~ claim 22 characterized in that the metal ions are contained in the titanium oxide coating in a concentration such that the coating initially has an antibacterial effect and that it later is biocompatible after an adjustable time.

27. (Currently Amended) The implant according to ~~one or more of the claims 22-26~~ claim 22 characterized in that the metal ion concentration in ~~a the~~ titanium oxide coating is 1-20% by weight, ~~preferably 5-15% by weight, still more preferred of 10-12% by weight.~~

28. (Currently Amended) The implant according to ~~one or more of the claims 22-27~~ claim 22 characterized in that the metal ions contained in the titanium oxide coating are copper ions, and/or silver ions, or a mixture thereof.

29. (Currently Amended) The use of the implant according to ~~one or more of claims 22-28~~ claim 22 for implantation into ~~patients~~ a patient.

30. (New) The method according to claim 1, wherein the preparation further comprises water and/or an acid.